

HEADQUARTERS 334TH BOMBARDMENT GROUP (M) AAF  
GREENVILLE ARMY AIR BASE  
GREENVILLE, SOUTH CAROLINA

55-6  
4 pages  
Page 1

MEMORANDUM)

September 25, 1942

NO 55-6)

OPERATIONS

FORMATION FLYING PROCEEDURE

1. Pursuant to 3rd Bomber Command requirements of Formation Flying under the C.C.R.T.C., program it is necessary that a standardization of formation signals be adopted for use by all Squadrons of this Group. The signals prescribed, in accordance with AAF Regulation 60-15 and augmented by Group requirements, will be used by Squadrons of this Group.

2. To save confusion, signals will be kept to a minimum, and visual signals will be used due to wartime employment of airplanes demanding radio silence. However, on training flights all airplanes will stand by on Group Frequency and check in with the Flight Leader before take-off so he can call them in case of emergency. Any foolish conversation will not be tolerated. Suggest Flight Leaders tune their Radio Compass to receive the tower and transmit take-off and landing clearances for the flight on Command, having the co-pilot stand by on command (group frequency).

3. VISUAL SIGNALS FOR FORMATION FLYING.

a. Flutter Ailerons: Attention; This signal will be used on the ground or in the air to attract attention of all pilots in the formation. Pilots should stand by for radio message or further signal. When on ground and in proper position to take off, this signal will normally mean "Ready to take off."

b. Fishtail or Yaw by Rudder Control during flight:  
Open-up Formation; Where applicable, this may be used to order a search formation.

c. Series of small dives and/or zooms: Prepare to land;  
This signal is an order to each pilot in the formation to take necessary steps preparatory to landing.

d. Dip right (left) wing; (1) From any formation other than echelon go into echelon of flights to the right (left) (2) Being in an echelon of flights to the right (left), go into echelon of individual airplanes to the same side. (3) Being in an echelon of individual airplanes, if wing is dipped on the side to which airplanes are echeloned, form echelon of flights to the same side. (4) Being in an echelon of flights or individual airplanes, if wing is dipped on the side away from the echelonnement, form same echelon to the opposite side.



Operations Officer.  
Captain, Air Corps,

ERVIN WURSTEN



OFFICIAL:

ERVIN WURSTEN,  
Captain, Air Corps,  
Operations Officer.

By order of Major BIRD:

e. Rock Wings: Slow, repeated, rocking motion of airplane about longitudinal axis, by gradual use of ailerons. Wing movement to be slower and of greater amplitude than in "Flutter of ailerons." Assume normal formation; From any other formation, go into the normal closed-up formation for the unit concerned.

NO 55-6 (Continued)

MEMORANDUM



FORMATION TAKE-OFF PROCEEDURE AND  
DIAGRAM

55-6

4 Pages

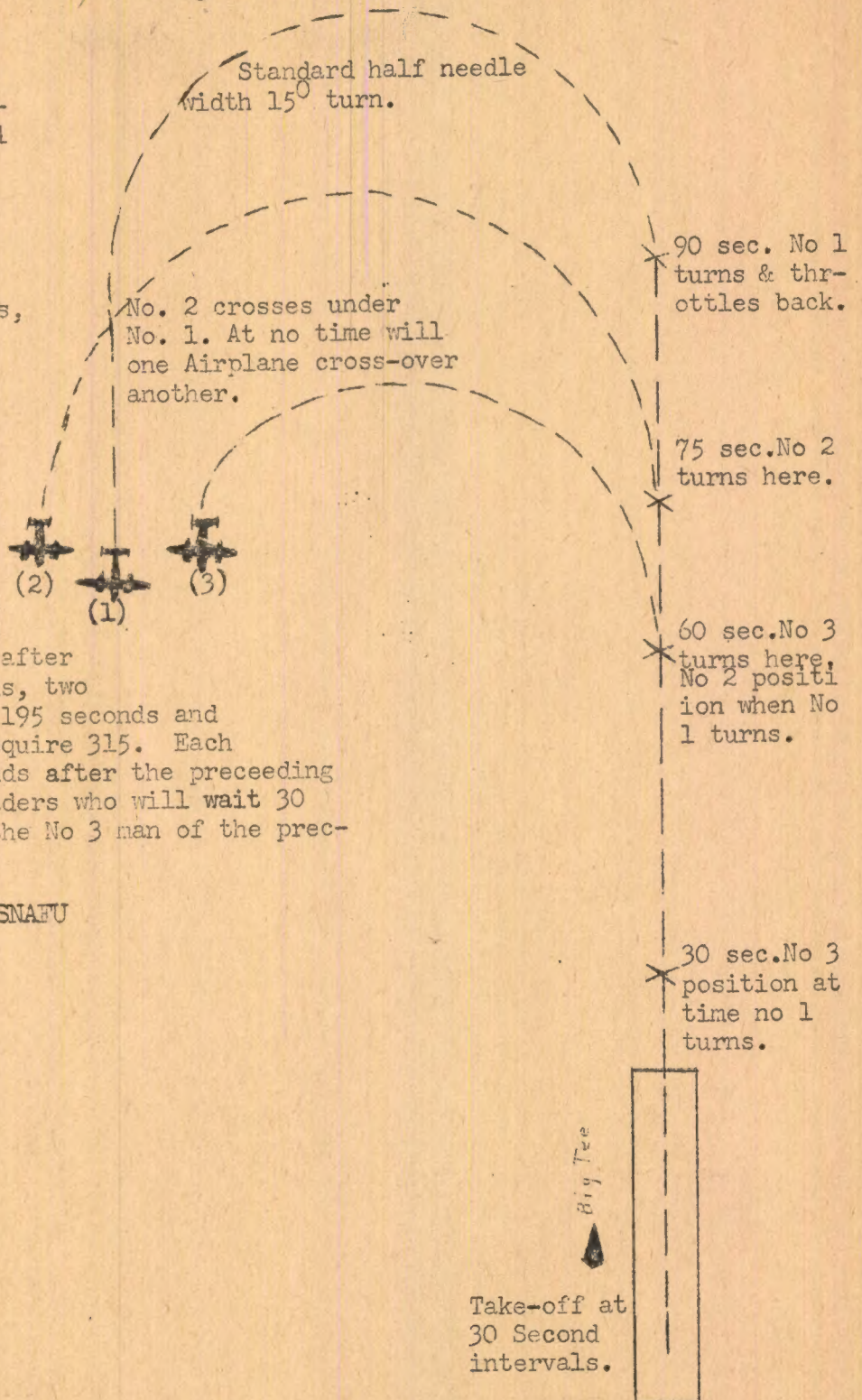
Page 3

Diagram for single element (3 ship) take-off.

For single element (3 ship) formation take-off a 30 second interval between each ship will be used, suggest pilots slowly start their roll before preceeding ship has left the runway. No 1 turns at 90 seconds, No 2 continues on 15 secs to 75 and turns, No 3 continues 15 after no 2 has turned and turns at 60 seconds.

For Flights of two or more elements, the Flight leader will fly out 90 seconds for each element plus 15 seconds extra for each element after his own. In other words, two elements would require 195 seconds and three elements would require 315. Each ship will turn 15 seconds after the preceeding ship except element leaders who will wait 30 seconds to turn after the No 3 man of the preceeding element.

(All clear?) SNAFU









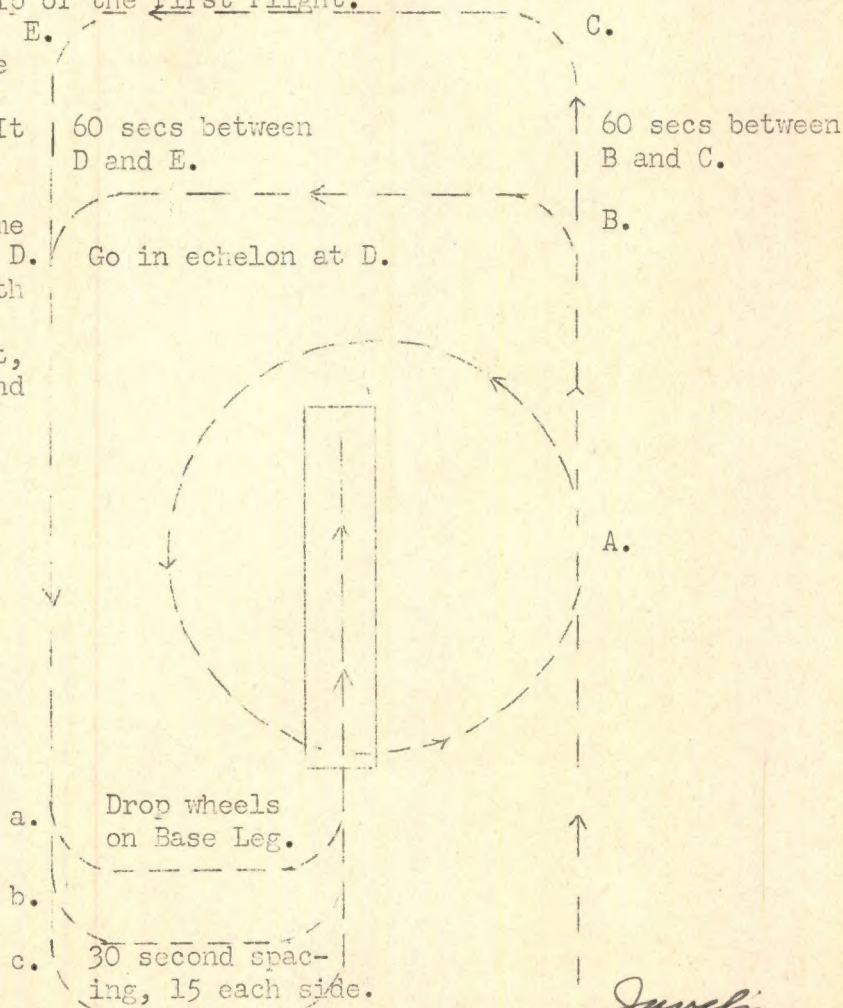
LANDING PROCEEDURE ILLUSTRATION 2 FLIGHTS OF 2 ELEMENTS PER FLIGHT  
AND 3 SHIPS PER ELEMENT:

The 1st element of the 1st flight turns at point B, at point D go into R echelon; at (a) number 1 (leader) turns on base leg, number 2 continues 15 seconds and turns at (b), number 3 continues 15 seconds after no. 2 turns and likewise turns on his base leg. This will space each Airplane at a 30 second landing interval. Leader turns on base leg 30 secs past the runway.

The 2nd element continues to C after 1st element turns of at B, this will be a 60 second interval on each side, total of 120 seconds spacing which will allow 2nd element leader ample leeway to adjust his spacing behind number 3 of 1st element.

The 2nd Flight will make a 360° half needle width 15° turn at point A, which will require 4 minutes and then follow same proceedure as 1st Flight in landing. The 1st Flight at 30 seconds per ship will require 3 minutes for landing, leaving the 2nd Flight 1 extra minute out of their 4 minute spacing for the leader to adjust himself 30 seconds behind last ship of the First Flight.

This proceedure is not difficult or hard to work out. It requires some clear thinking and proper timing, and with same will work out perfectly. A slip-up with one ship will throw the whole Flight out, watch your leader and let him watch the Flight leader.



NORMAL FORMATION for two or more Elements will be in ~~in~~ ECHELON DOWN. Position of 2nd element leader is directly in line with leader of 1st with nose of ship even to the tails of Nos 2 & 3 1st element, and down.

Signals for Flights will be the same as described on pages 1 & 2. All Pilots will watch their Element leader who will watch the Flight leader for signals.

If an Element is attacked from the right, upon proper signal pre-arranged with Leader, No 2 drops down and No 3 goes up, this staggers the airplanes so full effectiveness of their fire power can be attained. If attack is from the left, No 2 goes up and No 3 down. This same procedure is used in Flights with elements staggering ample distance apart to allow their individual planes to stagger.







B-25

## OPERATIONAL HINTS FOR THE B-25 AIRPLANE

### Handling the airplane

When the airplane is in motion it must be particularly borne in mind by all pilots that any turning movement once started cannot be immediately stopped, whether in the air or on the ground. Therefore all pilots should give particular consideration to the amount of controls applied to the airplane in any maneuver, from the point of view of possibly overcontrolling, since once a turning movement is developed, it will require positive action to stop it.

To avoid excessive use of brakes and engines when operating upon the ground, all turns should be started very gradually with the rudder, and power should be specifically reduces well in advance of the time that it is contemplated stopping the airplane.

It is particularly important that when an airplane is at rest and power is applied, no effort should be made immediately to head the airplane in any given direction. The airplane should be allowed to move in the direction of the heading of the nose-wheel, and then controls should gradually be applied to head in the desired direction.

Airplanes should never be pivoted on one wheel.

The faster the change in attitude of the airplane, the higher the stalling speed.

Landing and take-off speed is determined by the loading and not by any arbitrary figure.

Brakes should not be applied until airplane is very definitely clear of the ground.

Feet should not be on brake pedals on take-off and landing (until needed).

Do not apply brakes until nose has setteled to normal position on landing.

Do not allow nose-wheel to strike the ground abruptly after landing. Hold it off and allow nose-wheel to settle gradually.

Ease the weight off nose-wheel on take-off. This does not mean to hold the nose high, and pull off.

Do not use controls viclently. You crew may be injured if caught off balance or unprepared.

Do not fly in rough air at low altitudes when it is unnecessary. Choose a higher altitude that may be smoother, if conditions permit.

### Engines and propellers

If an engine catches fire upon starting, it can be put out in a good many cases by increasing the throttle.



Prior to checking the magneto, it is advisable to look out of the window and note whether or not there is any vibration in the engine to be checked. If vibration is present, it probably is an indication that all plugs are not firing. Under these conditions engines should be run up first to clear the vibration, if possible, before checking the magnetos. Before cutting the engine off, it is advisable to note whether or not there is any vibration in the engines caused by fouled plugs. If vibration is present, the engine should be run up briefly to clear the plugs before cutting the engine off. It is just as important to reduce the RPM before cutting off the engine, as it is to keep the RPM low on the engine warm-up.

When in doubt as to the proper manifold pressure and RPM to be used to meet any given condition, it should be borne in mind that the manifold pressure and RPM should have a definite relationship throughout the operating range; that is, low RPM, low manifold pressure; medium RPM, medium manifold pressure; high RPM, high manifold pressure.

When in flight, and vibration or overheating should occur in any one engine, it is not mandatory that all engines be reduced in manifold pressure or RPM. In other words, reduced power on the bad engine only.

A point to remember in landing is that the longer the period between the last use of throttle, the lower the RPM will be upon landing. In this connection under any circumstance, throttle should be definitely snapped back when they are no further needed.

Application of power in a glide should be only that which is required to meet the given situation. Power should not be indiscriminately applied when not essential since the attitude of the airplane is affected thereby.

\*\*\*\*\*